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ABSTRACT

Faculty and administrative concern over the rising indirect cost rates at Cornell University (New York) precipitated this study, focusing on research funding and the expenses not easily identifiable with specific projects. Some of the questions addressed include: what are the costs, who pays for them, and which arrangements, policies, partnerships, and cooperative interactions among the stake holders are effective? A mail survey of the top 100 public and 34 private colleges and universities was undertaken to determine the full cost of a sample project including indirect costs and fringe benefits. The Cornell Institute for Social and Economic Research (CISER) checked responses and coded for analysis. Of the reporting 113 institutions, the average indirect cost rate was 48.4% of the modified total direct cost. The rate of recovery was found to be 24% of the complete research cost. When compared with governmental studies, the actual recovery appears to be about $78 million lower than former government estimates. Underrecovery of direct costs is concluded to be a major problem for universities, with only 35% of respondents having a carry forward provision to recover in future years any underrecovery. It is important that a sound collaborative effort between universities and government agencies be established to deal with this problem. Part 2 of this report contains survey results summary tables. (SM)

ACCOUNTING FOR THE FULL COST OF RESEARCH

A STUDY OF INDIRECT COSTS

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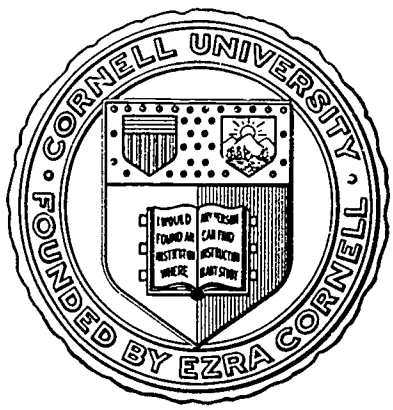

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Table of Contents

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This study was undertaken under the auspices of the Office of the Vice President for Research and Advanced Studies, Cornell University. The authors of this study at its initiation were Cornell University employees.

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Executive Summary

Major decisions affecting the financial health of universities and the vitality of research programs are being made by the federal government in the interpretation, application and reimbursement of indirect costs associated with research. This study focuses on these indirect costs, those research support costs not easily identified with specific projects, to provide fundamental information for continuing discussions on these issues.

The rapid rise over time in indirect costs, leading to an alleged imbalance between direct and indirect costs, conflict between university administrators and research faculty, and government agencies and university administrators, and unilateral government changes about cost reimbursement principles have raised numerous questions that need resolution.

What are these indirect costs and how are they allocated? What policies create incentives or disincentives to limit costs? What is the ratio of indirect to direct costs? How do public and private institutions differ in treating indirect costs? Is recovery adequate or are universities absorbing underrecovered costs? Not all of these questions can be fully answered; but this survey of 113 institutions provides new information about these key questions.

Major conclusions are the following:

* The FY 1985 average on-campus indirect cost rate for all 113 universities was 48.4 percent. Public institutions averaged 44.9 percent; private institutions, 61.1 percent.

* Respondents in FY 1985 expended $3.86 billion on federally funded research, $2.935 billion of direct costs, and they recovered $925 million of indirect costs from the federal government.

* The rate of recovery was 24 percent of total research cost, significantly lower than reported by smaller-scale studies of indirect cost recovery in universities.

* Comparisons with governmental studies, GAO or OSTP, indicates that actual recovery may be lower than previous government estimates by $78 million.

* Underrecovery of indirect costs is a major problem. Only 35 percent of respondents have a carry forward provision to recover in future years any underrecovery.

* Universities in the study underrecovered and absorbed $226 million in indirect costs in FY 1983 and FY 1984 and waived another $13.1 million.

* Most universities charge all grantors the same or lower rates than federal agencies; state agencies and private foundations typically are charged a lower rate.

* Public/private institutional differences appear in the indirect cost components, with private institutions showing a greater percentage of indirect costs allocated to plant operations and maintenance and a lower percentage to administration.

* Costs allocations to research projects are very diverse:

  Only faculty summer salaries and salaries of technical staff, travel and expendable supplies are always charged as direct costs. Graduate research assistant expenses, fringe benefits, and subcontract expenses exhibit wide variation in how charges are distributed and recovered.

* A budget of full costs of a composite research project shows wide variation in specific items, such as modifiers to direct costs and indirect cost rates; the overall mean cost of $302,004 exhibited a range of $357,000 to $261,000.

The details of indirect cost policies, decisions and operational implementation are provided.

ACCOUNTING FOR THE FULL COSTS OF RESEARCH

A Study of Indirect Costs

by

James J. Zuiches
and
Rebecca Vallely

I. Introduction

Within the American university two great forces are constantly intertwined: the discovery and development of new knowledge and the transmission of this knowledge to society at large and to new generations of its citizens. Underlying these fundamental activities, however, are the pragmatic issues of financing the enterprise, organizing and managing faculty, students and support personnel, and conducting the enterprise in national and state political contexts. Faculty, students, administrators, legislators, and the public are all stake holders in maintaining the intellectual integrity and fiscal health of the university.

Numerous recent studies and commission reports have focused on the intellectual and financial health of universities. This report focuses on one element in the fiscal domain: research funding and the costs of research in the university. What are these costs? Who pays them? What partnerships, arrangements, policies and cooperative interactions among the stake holders work? The crux of the current debate about research costs is the indirect cost or overhead associated with research projects.

Indirect costs and their recovery are the means by which universities are partially reimbursed for those research support costs not easily identified with specific projects, such as buildings, equipment, laboratories and administrative costs. The mechanism of recovery, indirect cost rates, has long been the source of considerable controversy.

University administrators argue that not only are these costs real, but that the government is underfunding research, particularly in the area of scientific equipment and laboratories (Kennedy, 1985a). Government agencies claim the indirect cost rates are too high and are rising too rapidly, a concern shared by many faculty members.

Of immediate concern to universities was the proposal by the Office of Management and Budget to revise OMB Circular A-21 (February 12, 1986, Federal Register). The proposal, based on a Department of Health and Human Services study of 13 research institutions, would have capped administrative indirect cost reimbursement at 26 percent of modified total direct cost (MTDC) as of July 1, 1986 and 20 percent of MTDC the following year. Universities protested that it contained unfair comparisons of indirect cost rates and erroneous assumptions about the accounting of indirect costs.

Many academic leaders felt strongly that short-term budget cutting needs, imposed by Gramm Rudman-Hollings legislation, should not be met by unilateral changes in cost principles that had been developed after careful and lengthy discussions with the parties involved (Pings, 1986; Rosenzweig, 1986; Cordes, 1986). University groups called for a delay in implementation until more information was available and alternatives could be considered.

The national debate on indirect costs extended beyond university administrators and government agencies. Kennedy's (1985a) article on the costs of doing research prompted numerous letters to the editor of Science from scientists which raised the fundamental concern that indirect costs are out of control, reduce funds available for research and need review (Sessions, 1985; Nelson, 1985; Arditti, 1986; Boyer, 1986). Kennedy's (1985b) response recognized the need for faculty and administrators to cooperate in trying to hold down indirect costs.

This study is aimed at providing comprehensive baseline information for continuing discussions between university administration, scientists and research sponsors such as the federal government.

The survey results may also provide important information to university administrators considering possible policy changes. Knowing what types of costs other institutions exclude from total direct cost to arrive at the MTDC allocation base, and in what category various costs, e.g., faculty sabbatic salaries and fringe benefits, are recovered, could be extremely valuable in negotiating changes with federal agencies--changes that might not only lower the indirect cost rate but increase actual recovery. This knowledge may also be valuable in assessing potential impacts of new proposals for reimbursing indirect costs.

One of the goals of this project is to separate out some of the diversity associated with institutional variation in philosophy, management and accounting practices. Specific questions address the policies for recovery, incentives and disincentives in the internal reallocation of recovered costs, and the difference between the real costs and underrecovery of costs.

Methodology

The design of the survey instrument went through three stages: initial preparation and internal review, external review by university business offices and organizations involved in negotiating with the federal government, and finally a detailed pretest involving four different types of universities: two large public institutions, one private institution, and one small public institution. Revisions based on the pretest were incorporated and the final instrument printed for distribution.

Initial contact was made with the President of each institution, alerting each one to the project, by a letter from Cornell University's Vice President for Research and Advanced Studies. Simultaneously, the survey questionnaire and a cover letter were sent to the university representative to the National Association of College and University Business Officers.

Survey questions were technical in nature and required an in-depth knowledge of the actual indirect cost calculations, university policies, and negotiated agreements.

The survey was divided into four sections:

I. How indirect costs are calculated and allocated.
II. Cost recoveries and to whom the funds are made available.
III. General information about the university.
IV. A composite research budget for a theoretical federal grant proposal designed to indicate the Total Research Cost at different research universities.

In the theoretical federal research grant proposal budget, participants were asked to have an individual responsible for approval of federal research proposal budgets complete a worksheet allocating predetermined cost to four categories:

1. Cost charged directly to sponsors--included in Modified Total Direct Cost (MTDC).
2. Cost charged directly to sponsors--excluded from Modified Total Direct Cost.
3. Cost recovered from sponsors through the indirect cost rate.
4. Cost not charged to sponsors as university-wide cost sharing policy.

The survey asked responding universities to calculate the total cost of the sample project including fringe benefits and indirect costs.

Responses were checked by the Cornell Institute for Social and Economic Research (CISER) for completeness and internal consistency, and coded for analysis. Follow-up phone calls to respondents clarified many issues and resulted in an overall better quality of data than simply coding the initial response. A detailed code book with instructions for internal checks, together with the cooperation

of respondents insured that the data base reflected the actual diversity and breadth of practices and experiences.

The diversity of universities involved in research became apparent as one examined the previous studies of indirect costs: size of institution's student body, size of research program and funded research were important attributes (Schneider, 1985). Similarly, whether public or private, and for public institutions whether land-grant or other state funded status, were important variables. The presence or absence of a medical school or teaching hospital affects the opportunity for conducting externally funded research and influences the amount of overhead associated with direct costs. Regional location and, of course, the array of operational policies permitted under OMB A-21 regulations. also affect costs and recovery of costs.

The goal of a comprehensive study meant that most institutions with research programs listed in reports of the National Science Foundation as receiving federal research funds were to receive the survey. The questionnaire was sent to the top 100 public and top 34 private institutions, excluding independent medical centers or schools. The responses included 24 private institutions (21 percent of respondents) and 89 state supported institutions (79 percent of respondents). Thus, 71 percent of private institutions and 89 percent of public institutions receiving the questionnaire participated in the study.

Overall, 21 universities did not respond or provided only partial responses, making their responses unusable. Two of these institutions provided data, but since they continued to use Salaries and Wages (S & W) as the base for indirect cost calculations, they were excluded from the analysis. Data from two other responding institutions, even after further calls to clarify the responses, were found to be problematic and non-comparable. The final number of usable cases, on which the analysis focuses, is 113 institutions.

Universities negotiate the federal sponsored research indirect cost rates with specific agencies of the government. In this study 100 negotiated with DHHS and 13 with the Office of Naval Research. A number of hypotheses have been raised about the differences between these agencies and the effect on the negotiated rate; but these are not addressed in this report.

II. Other Studies

White House Science Council

Numerous studies of indirect costs at universities have been reported. Each focuses on specific elements of the issue: trends over time, administrative costs, depreciation and use charges, etc. In a recent overview, the February 1986 Report of the White House Science Council, Panel on the Health of the U.S. Colleges and Universities (OSTP, 1986) provides a succinct summary of indirect costs, their definition and average reimbursements (Table 1).

"In essence, these seven pools are actually subdivisions of two types of costs: the first three may be considered infrastructure...the second four are administrative costs...together, university indirect costs now constitute, on average, almost one-third of total research costs, or half of direct costs." (OSTP, 1986: 46)

At issue is often the costs of infrastructure or administration, but the uncertainty about how these are determined, i.e., the internal accounting practices and policies, and whether all or part of the costs should be borne by federal sponsors of research. Issues of the quality and value of faculty effort reporting mechanisms have also generated much controversy with little close scrutiny.

The President's Private Sector Survey on Cost Control--the Grace Commission--and GAO's 1984 study both noted that effort reporting was dubious at best, and the Grace Commission and OSTP recommended that such effort reporting should be eliminated (OSTP 1986: 46-47). Recent OMB actions have effectively done so.

Specific reimbursements, such as sponsored projects administration, are justified by the accounting and regulatory responsibilities imposed by federal grants and contracts.

The OSTP study notes that the general administration category, representing 15 percent of indirect cost reimbursement, has not shown the growth of other administrative pools and has not been as controversial.

There is no question that unique circumstances of each institution, policies concerning implementation of OMB circular A-21, and vigor in pursuit of reimbursement affect the calculation of indirect cost rates and the success of recovery. Yet underlying all this diversity is a common structure, and one strategy for universities is to be aware of the impact of particular policies on their levels of recovery.

The OSTP report (p. 22) reflects on the practices of agencies and the impact on indirect cost recovery and notes that in 1981 National Institutes of Health reimbursements were 30 percent of total cost, while NSF's were only 25 percent. Although OSTP concluded that the NSF agency style helped hold down the reimbursement as a result of peer review of the total projects budget, the ratio of indirect reimbursements to total costs bears noting.

Recommendations of the White House Science Council provided continued support for the reimbursement of indirect costs, but also suggested the elimination of faculty reporting and cost-sharing to simplify the process. Its recommendation of a single rate for administration, however, continues to ignore the diversity across universities. We will discuss this in greater detail later in this report. Finally, the OSTP panel recommended more realistic use allowances for facilities and equipment. Analysis of the differences in this study provides some information on the effect of implementing this recommendation.

GAO Assessment of Indirect Costs

The recent GAO report (1986) on "University Finances, Research Revenues and Expenditures" came to three conclusions important to this debate. The GAO study is based on a sample of 18 public and 10 private universities, with 15 hospitals as part of the 28 institutions.

First, universities were experiencing a major shift in the source of their operating revenues. Over the 1975-84 period, the fastest growth occurred in tuition and fees, up 60 percent for private universities and 37 percent for public universities; but concurrently federal support for research and financial aid decreased from 26 percent to 22 percent of revenues for public institutions and increased from 30 percent to 32 percent for private universities. The decrease in federal grants and contracts, rise in tuition and fees, essential stability in state appropriations (for public universities) and endowments for private universities--all clearly contributed to the tension and conflict associated with allocating the resources available.

Second, in this larger context, the federal share of support for university research declined from 71 percent to 66 percent of the total, with private universities depending on federal grants and contracts for 81 percent of their research funds in 1984 and public universities for 57 percent. These federal funds, moreover, are divided into the direct costs of research expended by the faculty research programs and the indirect (or overhead) costs defined and recovered by the administration. As overall federal funding for research stabilized, according to GAO, the portion associated with indirect costs rose from 1975 to 1984 from 22 percent to 26 percent. This rise, however, masks a large distinction between public and private institutions: in private institutions indirect costs rose from 24 percent to 31 percent of total federal funding; while in public universities such costs held relatively constant at 20 percent. GAO does not speculate about this dramatic differential, which speaks to the issue of diversity of funding sources, equity in a fixed rate of reimbursement, and who bears the costs of research.

Third, GAO analyzed the changes over time in indirect costs. The GAO report notes that the federal government paid indirect costs at an average of 26 percent of its total support in 1984; but industry and state research support paid only 14 percent and 7 percent respectively for overhead. No mention is made of the base level of support provided to public universities by the states, although it was noted that different rules existed among the states concerning the return of indirect cost recoveries to the state. Private institutions, of course, retained all funds and distributed them to the general fund, colleges, or research units according to internal policies.

Administrative expenses as we have noted earlier usually include general university administration, department administration, and sponsored projects administration. According to GAO, administration ranged between 54 percent and 56 percent of all indirect costs, with

public institutions rising from 58 percent in 1975 to 62 percent in 1984. For private institutions, however, the administrative percentage changed from 53 percent to 47 percent over the decade.

According to GAO, this shift in proportionate share of indirect costs is a result of a major investment by private institutions in capital expenditures and subsequent incorporation of the use allowance or depreciation in the indirect cost rate.

Operations and maintenance, roughly 28 percent of indirect costs in 1984, rose over the decade for both types of institutions, but the reimbursement to private institutions was higher as a function of the capital expenditures for buildings.

One overall clear conclusion of the GAO report is that understanding the differential changes in the costs by type of institution is an essential ingredient in any discussion of indirect costs.

Although GAO's report expresses the caveats of small sample size and diversity in size, objectives, location, organization, personnel and funding, their results correspond quite well with the national study we are reporting. The differences between the studies, however, are instructive and relate to the debate concerning rising indirect cost, the source of these changes, and the relationship of universities to federal funding sources.

III. Results

Indirect Cost Rates

The average indirect cost rate, for 113 reporting institutions, for on-campus research was 48.4 percent of modified total direct cost, with a range of 29.2-87.5 percent (Table 2). The off-campus average rate was substantially lower at 26.5 percent with a range of 12.0-52.5 percent. These rates are the negotiated indirect cost rates for federally sponsored research.

This simple comparison of indirect costs rates makes multiple assumptions about how an institution is organized, what it charges as direct costs and what it charges as indirect costs under its management philosophy and procedures. These institutional, organizational and accounting practices reflect underlying philosophy and limit the inherent comparability of rates; but in the next sections, we will identify in detail some of these underlying characteristics.

Recovery Rate

A central issue in the current debate is the significant role and percentage of total costs that is due to indirect costs. To determine this percentage, we calculated total expenditures as a sum of direct costs and indirect recoveries. The institutions participating in this

study expended on federal grant and contract research in Fiscal Year 1985 a total of $3.86 billion. This sum includes both the federal research direct cost expenditures of $2.935 billion and indirect costs actually recovered for the same time period of $925 million. Using these summary statistics for the 113 respondents, the actual rate of recovery of indirect costs is 24 percent of total research costs (direct and indirect). We recognize that the total research cost as used in this calculation does not include underrecovered indirect costs and other cost-sharing. If such costs were included, the actual recovery would be even lower.

According to the GAO report (1986) the indirect cost recovery rate, defined as the indirect costs recovered divided by the total direct and indirect costs expended in the fiscal year, was 26 percent. The difference between the GAO rate and the actual rate of our sample of institutions is small, only two percentage points, but it reflects a $78 million difference in actual recoveries. Whether the universities have underreported recoveries or GAO's estimate is too high cannot be answered precisely. If it is the latter, the actual recovery rate is lower than previously noted and means more funds are being expended on direct costs than have been concluded from other studies.

The statement in the report of the White House Science Council that, "Together, university indirect costs now constitute, on average, almost one-third of total research costs, or half of the direct cost" (OSTP, 1986) is not confirmed in our study. Although the negotiated indirect cost rate for sponsored research averages 48 percent of the modified total direct cost (MTDC) base, this MTDC is on average only 66 percent of the total direct cost. Our study shows that actual reimbursement of indirect cost to universities averaged only 24 percent of total cost and only 31.5 percent of direct cost. In either case, more funds are available for the direct costs of research than has been argued by GAO and OSTP.

The actual recovery rate for indirect costs differs quite significantly between the public and private sector universities. As in the GAO study, we find a major difference: public institutions recovered their indirect costs at a rate of 21 percent of total costs (GAO reported 20 percent) whereas, private institutions had an actual indirect cost recovery rate of 30 percent (GAO reported 31 percent) (see table 3). These differences will be addressed later when the different policies of public and private institutions are discussed.

Even within the public sector, additional differences appear. For example, in Table 4, state universities that are officially designated as the land-grant institution for the state recover less of the indirect costs, 19 percent, than other public universities which recover indirect costs at a rate of 23.4 percent.

The discussion of federal grants and contracts and the indirect cost recovered is essential because this funding source is the dominant category in the organized research function of universities. Based on our survey, 63 percent of all total direct costs for

organized research is derived from federal grants and contracts, 17 percent from non-federal grants and contracts, and 20 percent from other funding sources, including gifts, federal and state appropriations and other unrestricted funds for research.

It is often assumed that institutions do not charge exactly the same rate to federal and non-federal sponsors. With the exception of corporations, however, most institutions do charge the same or a lower rate to state agencies, foundations or other private funders. Table 5 shows that, for the 61 respondents to this question, the predominant strategy is to charge the same rate as the federal sponsor is charged. State institutions are, however, likely to charge state agencies a lower rate. The bulk of the universities, typically, charge the same rates to all sponsors.

Components of Indirect Costs

The actual indirect costs allocated to on-campus sponsored research reflect the enormous diversity in university policies and practices; but as shown in Table 6, these survey results are quite comparable to other analysis, for example, by the White House Office of Science Technology and Policy (Table 1).

The infrastructural component of indirect costs reflects about 38 percent of the overall indirect costs, about 10 percent allocated to use allowances or depreciation for equipment and buildings and 28 percent for plant maintenance and operations. The range, however, demonstraces the fact that not every university allocated charges to these categories.

The results of the survey indicate that the administrative cost components, i.e., department administration, sponsored administration, research administration and general administration, account for an average of 56.1 percent of the total indirect cost allocated to sponsored research.

This agrees with both the GAO study based on 1984 cost and the Report of the White House Science Council on the Health of U.S. Colleges and Universities based on 1983 data.

One could conclude from the results of these three studies that, in fact, administrative cost, as a percentage of total indirect cost, has remained constant over the past three years.

However, the great diversity in these rates at individual institutions must be acknowledged, both variation between components and variation within components

The differences in allocation of indirect costs by type of university are reflected in Table 7. Private institutions allocate a greater percentage of costs to plant operations and maintenance than public institutions. Within the public sector, land-grant universities allocate the least costs to plant operations and maintenance. This contrasts sharply with the administrative costs

allocation, where private sector institutions allocate, on average, four percentage points less to administrative pools than public sector institutions. Again, these overall results are quite similar to GAO's report, but the larger and more diverse sample size indicates that the rise in administrative costs reported by GAO for public institutions may not have been as great, and the decline for private institutions, not as steep. The point, of course, is that the small sample size of the GAO study may have provided misleading estimates of the specific rates of change.

A recommendation of the OSTP--White House report pertained to shifting from use allowances to depreciation of buildings and equipment. The implication, that a depreciation schedule permits a more rapid and appropriate recovery, is borne out in Table 8. Using the actual recovery rate as an indicator of likely impacts, it is clear that for the 10 institutions who use depreciation schedules, these are associated with an overall higher actual recovery rate. This rate, however, is only indicative of the overall difference, and based on a shorter period of depreciation than an allowance and hence more rapid recovery, one would expect such a result.

Most institutions, however, continue to depend on the use allowance as the mechanism for recovery of indirect costs for construction, equipment and renovations, as is evident in Table 9.

Public vs. Private Institutional Arrangements

A number of models have been proposed to explain the likely differences in indirect costs between public and private institutions. For example, it has been hypothesized that public or state supported universities do not encourage their faculty to request salary reimbursement for research activities since the salaries are paid by the state. Others argue that state universities have little incentive to collect fully the indirect costs of research, either because these are returned to the state treasury or because the state is already paying for the overhead costs. Furthermore, faculty at private universities are concerned that they are not competitive with state institutions because of the difference in published indirect costs rates. Each of these arguments has merit, but conceptually and empirically, they have received only limited attention. Without spending extensive effort to debate these assumptions or hypotheses, the survey results do provide some empirical evidence concerning particular issues.

Of the 89 public institutions only 28 returned a part or all of indirect costs recovered to the state and these are limited to New York (4), California (3), and 13 other states. Most of these latter are land-grant institutions, which receive direct appropriations for research as part of a statewide system for which policy is set centrally.

For those institutions which do not return funds to the state, budget offsets are often negotiated in anticipation of the university achieving an expected level of recovery on federally funded research projects.

Does this make a difference in how these universities charge overhead costs? Comparing the percentage of indirect costs charged for public institutions with and without a give-back provision shows some differences. Those required to return all or part of their recovered funds show a slightly lower percent attributable to building and equipment use allowance charges and plant operations and maintenance. This is counterbalanced by a slightly higher percentage for administrative categories in sponsored research or departmental administration.

Internal Allocation of Recovered Funds

Other issues of reimbursement pertain to the allocation of recovered funds within the university itself. Many faculty members charge as a direct cost part of their academic year appointment (salaries) to grants and contracts. The survey asked institutions what happened to the salary recovered as a direct charge to the grant. Did salary accrue to the department, college or university? In a few state institutions, such salary recovery had to be returned to the state (see Table 11). But over 66 percent of the universities credited some or all of the salary recovered to departmental accounts. Simultaneously, some of these funds are often credited to college and general university accounts; but clearly the structural incentives, both to charge salary on grants and to use recovered funds within the department, exist in many schools. Public institutions are more likely to credit salaries to the department than private universities, although this is true, as well, for a majority of these private schools.

The basis for allocation of recovered indirect costs is reimbursement for past or concurrent research related costs and these costs are incurred at unit levels in the department, college, center and the overall university. How institutions allocate recovered costs can vary depending on local policy and to whom funds are allocated. For respondents to this question (N=91) a variety of allocation rules seem to apply. Table 12 does not specify the precise rules of distribution, but distribution is typically based on funds recovered by the college and departments. Each cell shows the percentage of respondents using a given mechanism for allocation to a given unit, for example, 59 percent of responding universities return some funds to a department based on the amount recovered, and 12 percent of the same 91 universities use a criterion of costs incurred. Overlap in criteria can and does occur and the complexity of division rules as well as the nature of the question, does not permit a more detailed analysis.

About a quarter of the institutions returned some indirect costs to the faculty members' program based on funds recovered. This serves as an incentive, no doubt, to the faculty member, department and college who are incurring part of the overhead costs of administration.

Underrecovery and Carry Forward Provisions

In the continuing negotiations between universities and the federal government, as a result of the strategy of estimating reimbursement, the issue of over or underrecovery must be addressed. The arguments of agency officials and university administrators also conflict at this point as well. University leaders indicate that the institutions are contributing via cost-sharing and often do not fully recover the overhead costs of externally funded research programs. Government responses are to quote the rise in indirect costs over time and to argue that the universities are surely overrecovering, or at minimum, by better accounting for indirect costs, recovering more fully over time.

The arguments for and against achieving full recovery or sharing in the costs do not need repetition. Arrow's article in Science (1983) raises and discusses the issue at length, but with little empirical data.

Two important pieces of data have been collected in this study, which should contribute to clarifying the costs to universities of underrecovery. First, the transitions from one system of calculations of indirect costs, using salaries and wages, to modified total direct costs (MTDC) required universities to estimate costs with little or no data or experience. The art of forecasting indirect costs after a major change in accounting policies could result in significant underrecovery of millions of dollars. Universities with a carry forward provision in their indirect cost rate calculations and agreements might recover these funds.

Not all universities, however, have such a carry forward provision in their negotiated agreements. In fact, 65 percent of the institutions responding to this question (N=110) (see table 13) have no carry forward provision. This means that the universities are absorbing any underrecovery of indirect costs.

To determine what the magnitude of underrecovery has been, two questions were asked:

1. What were the underrecovered indirect costs by fiscal year 1982-83 and 1983-84?
2. For those with the carry forward provision, has the university agreed to waive the recovery of such costs and, if so, how much?

Even when carry forward provisions permit recovery, institutions have agreed to waive $13.1 million. We explicitly asked about FY 1983 and FY 1984 underrecovery and found that $131 and $151 million respectively each year were underrecovered by universities.

Of the $282 million underrecovered in FY 1983 and 1984, only $69.2 million was at universities with a carry forward provision and these institutions have agreed to waive $13.1 million. If one assumes that the remaining $56.1 million is incorporated into future indirect

cost rates under the carry forward provisions, a conservative estimate of the underrecovery and hence forced sharing by universities in federally funded research over the past two years is approximately $226 million.

IV. Determining the Full Cost of Research

To identify the diversity across institutions, as well as determine the full costs of a standard research project, a composite research project was prepared.

Instructions specified the assumptions and requirements of the composite project. The computation of results in the worksheet reflect the distribution of charges, whether direct or indirect, or as cost sharing.

The instructions (page 11 of the questionnaire) indicated the nature of the composite research budget.

The following conclusions can be drawn from the results of this part of the survey (Table 14): cost allocations are made in many different ways by different institutions. The number of different ways were almost equal to the number of respondents. The only consistent policy was that the summer salaries of faculty, salaries of full-time lab technicians, travel and expendable supplies were charged directly to sponsors and were included in the base for calculations of indirect costs.

One might have expected faculty academic year salaries to be charged to grants and contracts, yet 14 percent of the respondents did not charge such costs directly, and indicated such costs were treated as institutional wide cost sharing.

Research assistant expenses of graduate students on the research project can be broken down into stipend, tuition, and fees. In 80 percent of the cases, the stipend was a direct charge and was included in the MTDC base, but 16 percent of the universities excluded stipends from the MTDC base and 4 percent used it as cost-sharing. Tuition charges were more likely to be excluded from MTDC base, but a real diversity existed, as at least one institution showed tuition as an indirect cost and others distributed the charge in every category. The same was true of fees for graduate students.

Every discussion of indirect costs notes that secretarial support can be categorized as either a direct or indirect charge: however, the vast majority of institutions, 92 percent, treated the secretarial and clerical costs as a direct charge.

Fringe benefits, likewise, were generally treated as a direct charge to sponsors and were included in MTDC; yet a few institutions excluded fringe benefits from MTDC (4 percent) and others (7 percent) treated it as a cost-sharing item.

Equipment, especially for more expensive items, from computers to laboratory or technical equipment, vehicles and fabricated items, was charged directly but was excluded from the MTDC base. Differences do exist for other capital expenditures, insofar as 18 percent of the respondents treated them as direct costs and charged indirect costs on the expenditures. A few institutions treated such costs as part of the indirect cost pool or as cost sharing items.

Although one might expect every university to try to capture both the direct and indirect costs of communication expenses on the project, 4-5 percent excluded these costs from the MTDC base, a few treated these costs as indirect costs, and a few simply absorbed the local telephone charges as a part of cost-sharing.

Rental of facilities and conference expenses also fell into the categories of direct charges, but depending on university policy, these costs may be excluded from MTDC base.

University policies for handling subcontracts also varied, even though OMB Circular A-21 is seemingly quite explicit about what is permitted. For example, 13 percent of institutions excluded small subcontracts from the MTDC base, when they could have legitimately recovered indirect costs on such items; the same is true for subcontracts over $25,000, where 17 percent excluded the first $25,000 from the MTDC base, when OMB Circular A-21 permits the entire amount to be included in the MTDC base. In addition, 2 percent (2 universities) included the entire amount in the MTDC base.

Computer charges also were widely distributed, with over 10 percent of the universities not charging computer costs directly at all, whether central mainframe costs or micro-computer systems at departmental levels.

Although animal care cost or human subject payments are part of MTDC base, a few institutions excluded these items.

The consequences of university policies on each item would be reflected in the full costs of the project. If every allowable item were charged as a direct cost, rather than indirect, and included in MTDC base, the direct costs would rise dramatically and the base, for charging indirect cost, would also be higher. Although such a policy could subsequently result in a lower negotiated indirect cost rate, the total cost to sponsor and actual recovery of total research costs by the university could increase significantly. Each institution would need to compare its policies and implications for recovery of full costs to the national averages. The next section will discuss these issues.

Composite Project

Much of the discussion, writing and debate concerning indirect costs founders on the problem of lack of comparability across institutions and the uniqueness of every scientific research proposal. To remedy and overcome this condition, a composite, standardized

project proposal budget was designed. Its dual purpose was to control as much of the idiosyncratic assignment of costs as possible and to identify the diversity of decisions and policies of universities.

With a standard set of direct costs, the variation results from university policies for charging items as direct and indirect, including or excluding items from MTDC, and cost-sharing. The differences due to indirect cost rates are reflected in the dollar amounts of the budget.

The summary of costs is the average of all responding institutions and provides a basis for each institution to compare its responses to the national average. Each university can then identify how its policies affect the cost, whether below or above the national average.

For example, in the composite budget, only 48 institutions charged part of the project at off-campus rates. Also, some institutions, but not all, indicated that certain items were cost-shared by the university as a matter of policy.

Tables 15 and 16 on Composite Project Budget Summary show the average cost and range for each item.

On-campus costs ranged from $92-242,000 with a mean of $214,149. Off-campus costs for 48 institutions ranged from $0-93,000 with a mean of $36,641.

One of the most surprising aspects of the results is the very large number of items treated as modifiers in calculating the base for indirect costs. The average dollar volume for on-campus modifiers was $75,153 with a range of $50-145,000. These resulted in an MTDC base of $138,996 against which the average indirect cost rate of 48.4 percent was applied. A similar calculation for off-campus charges was completed.

The total direct costs for the composite project (Table 16) ranged from $204-242,000 with a mean of $229,716. Total indirect costs ranged from $31-121,000 with a mean of $69,686. The total research cost to the sponsor ranged from $260-347,000 with a mean of $299,402. Adding the cost sharing item yielded an overall full cost of the composite project at $302,004, with a minimum cost of $261,000 and a maximum charge of $357,000.

Within this broad range, a key distinction is between public universities whose full charge averaged $298,027 and private universities whose full costs would be $314,156.

V. Summary and Discussion

The issue of indirect costs and their recovery has created internal conflict within the university research community and between academic leadership and government agencies. A healthy collaborative

partnership needs to be renewed as proposed by the White House Science Council and earlier by the National Academy of Sciences Ad Hoc Committee on Government--University Relationships in Support of Science (1983). Each of these groups made several recommendations to expand federal research funding, lessen the bureaucracy associated with project management, and adopt new policies to reflect better the real costs of overhead associated with research.

One goal of this study was to provide a solid basis of information for continued negotiations with the federal government. We have presented evidence from a national survey of 113 institutions, representing a diverse array of research activities. Our results in many key areas are comparable to other studies by GAO or OSTP; but our results differ in two essential aspects: (1) assertions that indirect costs represent one third of total research costs are not supported as we find that reimbursed indirect costs average only 24 percent of total cost; and (2) that underrecovery of indirect costs remains a problem of great magnitude for universities. Recognition of these issues will contribute to a better understanding of the position of universities.

A similar recognition and education about indirect costs must be presented to faculty at research institutions. Concerns about the lack of competitiveness due to high indirect cost rates can be alleviated by an understanding of the nature of the costs, but also by the recognition of the variability among universities in establishing the full costs of a project, with on- or off-campus components and modifiers on which indirect costs are not calculated. With the data described in the study and its own inputs, each university can determine how its policies affect the costs of the composite project and evaluate the potential impacts of changes in its policies.

Locally and nationally, we hope the information provided by the respondents to this study will be used to understand, justify and adapt policies on indirect costs and strengthen the partnership in research and education within the university and between universities and the government.

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Table 1

The Components of the Indirect Cost Pool

	Indirect Cost Pool	Average Indirect Cost Reimbursements in 1984
1.	Operation and maintenance (utilities, janitorial services, routine maintenance, etc.)	28%
2.	Use charges for buildings and equipment	10%
3.	Libraries (books and materials, salaries, expenses and fringe benefits of librarians and library staffs)	4%
4.	Student Administration and services (costs of registrar, deans of students, student advisors, health services, etc.)	1%
5.	General Administration (salaries, expenses and fringe benefits of university officials and university-wide offices, such as personnel, accounting and payroll)	15%
6.	Sponsored Projects Administration (salaries, expenses and fringe benefits of administrators and staff in offices set up to administer sponsored research programs)	7%
7.	Departmental Administration (salaries, expenses and fringe benefits of personnel [e.g., chairmen, secretaries and faculty] in academic departments and divisions, and organized research units attributable to administration activities)	33%

Source: Office of Science and Technology Policy, 1986
(Original Report total equals 98%.)

Table 2

Average Indirect Cost Rate for U.S. Institutions, 1985

	(N)	Average	Range	Private Institutions	Public Institutions
On-Campus	(113)	48.4	29.2-87.5	61.1	44.9
Off-Campus	(107)	26.5	12.0-52.5	31.8	25.2

Table 3

Comparison of Rates of Reimbursement Over Time and Across Studies for Public and Private Institutions

	Cornell Survey		GAO Survey		
	(N)	1985	(N)	1978	1984
Overall	(113)	24%	(18)	22%	26%
Private	(24)	30%	(6)	24%	31%
Public	(89)	21%	(12)	20%	20%

Table 4

Actual Indirect Cost Recovery Rates
as a Percent of Total Research Cost FY 1985

	Number of Institutions	Mean	Range
Total Population	(113)	23.9	5.3-43.8
Private	(24)	29.7	20.5-43.8
All Public	(89)	21.1	5.3-32.8
Land-grant	(47)	19.1	5.3-29.7
Non-land-grant	(42)	23.4	18.0-32.8

Table 5

Percent of Universities Having Higher, Lower or Same Rate for Federal Government and Other Sponsors (N=61)

	COMPARED TO FEDERAL RATE		
	Higher	Same	Lower
State Grants and Contracts		43	57
Subcontracts and Agreements with other Colleges and Universities		93	7
Foundations		52	48
Corporations	10	70	20
Other Private Agreements		70	30

Table 6

Actual Indirect Cost Allocated to On-Campus
Sponsored Research for Fiscal Year 1983-84

(N=111)	Average ($1000)	Range	Percent of Total I/C
Use Allowances or Depreciation - Buildings	499.1	0-2,643	3.9
Use Allowances or Depreciation - Equipment	771.9	0-3,155	6.0
Plant Maintenance & Operations	3,638.9	0-15,355	28.2
General Administration	1,861.1	27-7,643	14.5
Department Administration	4,352.4	116-25,300	33.8
Sponsored Program Administration	1,005.9	0-7,054	7.8
Library	585.8	6-3,350	4.5
Student Services	81.7	0-802	.6
Other	90.1	0-1,770	.7
Total Indirect Cost -- Sponsored Research	12,887.1	292-51,738	100.0

Table 7

Indirect Cost Allocated to Administration
as Percent of Total Indirect Costs, 1983-1984.

	N	Cornell Report	GAO Report	OSTP Report
Total	(111)	56.2%	54%	55%
Private Institutions	(24)	53.0%	47%	
All Public Institutions	(87)	57.1%	62%	
Public, Non-Land-Grant	(40)	57.5%		
Land-Grant Institutions	(47)	56.8%		

Indirect Cost Allocated to Plant Operations and Maintenance
As Percent of Total Indirect Costs, 1983-1984.

	N	Cornell Report	GAO Report	OSTP Report
Total	(111)	28.2%	28%	28%
Private Institutions	(24)	30.3%		
All Public Institutions	(87)	27.0%		
Public, Non-Land-Grant	(40)	27.0%		
Land-Grant Institutions	(47)	24.0%		

Table 8

Mean Actual Indirect Cost Recovery of Universities Using Depreciation vs. Use Allowances for Buildings and Equipment

	(N)	Actual Recovery Rate
All Cases	(113)	23.9%
Use Allowance	(103)	22.3%
Depreciation	(10)	29.8%

Table 9

Mechanism for Recovery of Indirect Costs
(Percent of Respondents Using Each Alternative)

Item	(N)	Use Allowance	Depreciation	Both/ Other
Movable Equipment	(112)	80%	15	5
Building Equipment	(113)	91%	9	0
Alterations/Renovations	(109)	87%	9	4
Previous Construction	(113)	88%	10	2
New Construction	(112)	89%	10	1

Table 10

Actual Indirect Cost Allocated to On-Campus
Sponsored Research at Public Universities for
Fiscal Year 1983-84

	Indirect Costs Returned to State	Indirect Costs Retained by University
	(N=28) %	(N=59) %
Use Allowances or Depreciation - Building	3.27%	4.05%
Use Allowances or Depreciation - Equipment	5.99%	6.44%
Plant Maintenance & Operations	25.44%	27.97%
General Administration	15.05%	15.09%
Department Administration	35.56%	34.00%
Sponsored Program Administration	9.42%	7.74%
Library	4.10%	3.67%
Student Services	0.82%	0.30%
Other	0.35%	0.74%
Total Indirect Cost-- Sponsored Research	100.00%	100.00%
Total Costs	$13,600,000	$10,513,000

Table 11

Percent of Universities Allocating Salary Recovery on Grants and Contracts to State or College Units

	Percent	(N)
All Institutions		
Returned to State	7	(89)
General Account	27	(113)
College Account	23	(113)
Departmental Account	66	(113)
Private Institutions		
General Account	33	(67)
College Account	25	(75)
Departmental Account	54	(46)
Public Institutions		
Returned to State	7	(93)
General Account	26	(74)
College Account	23	(77)
Departmental Account	69	(31)
Other	4	(96)

Table 12

Basis for Allocation of Recovered Indirect Costs
by University Unit
(Percentage of Respondents Allocating to Unit)

Unit (N=91)	Funds Recovered	Costs Incurred	Other
College	67%	17%	5%
Department	59%	12%	3%
Faculty	25%	3%	3%

Table 13

Distribution of Universities with
Provision to Carry Forward and Recover Indirect Cost

	N	Percent
Carry Forward Provision	(38)	35%
No Carry Forward	(72)	65%
Total	(110)	100%

SECTION IV: WORKSHEET AND SUMMARY

A. WORKSHEET - IDENTIFIED COST - page one
Project Period: Fiscal Year 1985-86

Project	N = 113 Included	Excluded	Indirect	Distribution: Costs Charged Directly to Sponsors — Institutional Costs	Other in MTDC Base	Other from MTDC Base	Costs Not Charged Directly to Sponsors — Cost	Wide Cost Sharing	(1
				(A)	(B)	(C)	(D)	(E)	
	Salaries & Wages								
122	1. Faculty Academic Year 10%		$	4,700	86%	0%	0%	14%	
123	2. Faculty 2/9 Summer Salary (off campus)			7,400	100				
124	3. Other Professional, Post Doc 75%			16,100	98	2			
	4. Grad Student-research assistant								
125	a) Stipend-12 mos.	7,800			80	16		4	
126	b) Tuition	4,400			27	39	1	15	18
127	c) Fees	600		12,800	29	32	2	22	15
128	5. Secretarial/Clerical 25%			4,500	92		8		
129	6. Lab Techs, Other Tech & Skilled Staff 100% 1 FTE			22,000	100				
130	7. Other Support Staff (e.g. field workers) 50%			5,000	100				
	8. Temp. Wages								
131	a) Undergrad Students			1,000	99			1	
132	b) Others			500	99%			1%	
133-137	TOTAL Salaries		$	74,000	$ 67,329	$ 3552	$ 642	$ 1778	$ 699
	Fringe Benefits			fill in					
138-140	% of $			fringe					
141-143	% of $			benefits					
144-146	% of $			cost					
147-150	FRINGE BENEFIT TOTAL (Mean)				$ 12,804	$ 223	$ 128	$ 134	
	Equipment								
151	1. Meter			300	64%	35%	1%	0%	
152	2. Lab or Tech Equipment			24,700		98	1	1	
153	3. Computers - micros, IBM AT			7,000		97	2	1	
154	4. Vehicles - pickup truck			12,000		96	3	1	
155	5. Other - fabricated radio tower			10,000	4	94	1	1	
	Other Capital Expenditures								
156	1. New construction - special cost (e.g. facilities unique to this project)			8,000	18	74	7	2	
157	2. Renovation of Lab Space			2,000	17%	68%	11%	4%	
				(A)	(B)	(C)	(D)	(E)	(I

Entries indicate percent of total universities distributing expense in column indicated.

Table 14 - Part Two

VARIABLE #

	WORKSHEET - page two	Project Costs Base (A)	Costs Charged Directly to Sponsors: Included in MTDC Base (B)	Costs Charged Directly to Sponsors: Excluded from MTDC (C)	Costs Not Charged Directly to Sponsors: Indirect Cost (D)	Costs Not Charged Directly to Sponsors: Institutional Wide Cost Sharing (E)
	Travel					
158	1. Domestic	2,000	100%	0%	0%	0%
159	2. Foreign	4,000	100			
160	**Service Agreements for equipment**	750	91	5	4	
161	**Expendable Supplies**	2,000	100			
	Communications					
162	1. Publication Costs-page charges	500	94	4	2	
163	2. Telephone-long distance $15/mo.	180	91	5	4	
164	3. Telephone-local service $15/mo.	180	53	4	38	5
165	4. Photocopying - $20/mo.	240	95	4	2	
166	5. Postage (annual)	90	92	4	4	
167	**Facilities, Rent and Special Utilities** - off-campus location required for project (trailer)	3,600	75	22	3	
168	**Conference Expenses**-meals,travel, honorarium, 20 participants	15,000	86	14		
	Subcontracts					
169	1. Company A - weather satellite report	12,000	87	13		
170	2. Company B - lease reconnaissance <25,000	29,000	83	17		
171	plane 4,000 >25,000		2	98		
	Computer Charges (Main Frame)					
172	1. Central Campus	7,000	68	22	5	5
173	2. Local Departmental System	500	74	11	12	4
	Other					
174	1. Animal Care Costs $480/month	5,760	94	5	1	
175	2. Subject Payments $4/hr/subject 300 human subjects	1,200	94%	6%	0%	0%
176-180	**TOTAL** (Note:(A) excludes Fringe Benefits #2)	$ 222,000				
181-185	**COLUMN TOTALS** (including fringe benefit cost)	$ 234,649	$ 151,429	$ 78,284	$ 2,322	$ 2,602
	(Mean) N = 113	(A)	(B)	(C)	(D)	(E)

Table 15

Composite Project: Budget Summary

1. Modified Total Direct Cost Base	On-Campus Average (N=113)	Range ($1,000)	Off-Campus Average (N=48)	Range ($1,000)
Total Direct Cost of Project	$214,149	(92-242)	$36,641	(0-93)
Total Modifiers (subtract from Total Direct Cost)	(75,153)	(50-145)	(7,372)	(0-55)
Modified Total Direct Cost Base	$138,996	(23-178)	$29,269	(0-71)
1985-86 Negotiated Indirect Cost Rates	8.4%	(29-87)	26.2%	(0-43)
Total Indirect Cost (MTDC base * rate)	$66,415	(10-121)	$7,702	(0-20)

Table 16

Composite Project: Budget Summary

	Average Costs	Range ($1,000)
Total Direct Cost (Totals of on and off campus)	$229,716	(204-242)
Total Indirect Cost	69,686	(31-121)
Total Research Cost to be charged to Sponsor	299,402	(260-347)
Plus Research Cost not Included Above (cost-sharing)	2,602	(0-14)
Total Research Cost for the Project (Sponsor's cost + institutional cost sharing)	$302,004	(261-357)

ACCOUNTING FOR THE FULL COST OF SPONSORED RESEARCH

A SURVEY OF INDIRECT COSTS

SURVEY RESULTS--SUMMARY TABLES

PART TWO OF REPORT:
Accounting for the Full Cost of Research
A Study of Indirect Costs

Cornell Institute For Social and Economic Research
Survey Research Facility
323 Uris Hall
Cornell University
Ithaca, New York 14853-7601

Blanks filled with raw data from responses. Numbers are average responses, unless otherwise specified. The number of respondents providing data is shown as "N".

This survey is about indirect costs allocated to sponsored programs. It is being sent to the major research universities in the United States, including members of the American Association of Universities and the National Association of State Universities and Land Grant Colleges.

The questions are relatively technical in nature and require an in depth knowledge of the actual indirect cost calculations, university policies and negotiated agreements to complete. The survey is designed to obtain sufficient information about the calculation of indirect cost rates to assess relative levels of comparability between university rates. It therefore will require more time to complete than other surveys regarding this issue. The results will allow you to assess how your rates compare with those of other universities and, therefore, should be of significant benefit to you in explaining and negotiating rates with outside sponsors, as well as in discussing the increasingly sensitive indirect cost rate issue with faculty and program directors. The consolidated results of the survey will be made available to all participants and to the key organizations representing research universities on indirect cost policy.

The survey is divided into four sections:

I. How indirect costs are calculated and allocated.

II. Cost recoveries and to whom the funds are made available.

III. General information about your university.

IV. A composite research budget for a theoretical federal grant proposal designed to indicate the **Total Research Cost** at comparable research universities.

If your university has separate indirect cost rates for each campus or research center, please base your response on the one which represents the greatest volume. If you think more than one center should be included, please complete a separate survey for each one.

For further explanation of any of the survey questions, please contact the Survey Project Leaders at Cornell University, Ithaca, New York 14853:

Rebecca Vallely
220 Jones Avenue
Groton, NY 13073

or

Dr. James Zwiches, Director
Agricultural Research Center
Washington State University
Pullman, WA 99164

VARIABLE #

SECTION I: INDIRECT COST

1. What are your current (as of 7/1/85) **negotiated** indirect cost rates for **federally sponsored research**? Please indicate the allocation base by placing the rate(s) in the appropriate box below. If available, **please enclose a summary sheet** indicating the component cost categories.

Indirect Cost Rates as a percent of:

	Modified Total Direct Cost Base	Range	Private	Public	(N)
4 a) ON-CAMPUS	48.4%	29.2 - 87.5%	61.1%	44.9%	113
6 b) OFF-CAMPUS (if applicable)	26.5%	12.0 - 52.5%	31.8%	25.2%	107

8 2. What was the total **Federal Research Direct Cost Expenditures** on grants and contracts for your university's 1984-85 fiscal year (or most recent year available)? (million $)

	MEAN	N
All	26.0	113
Private	35.7	24
Public	23.3	89

TOTAL ALL $2,934.9

RANGE $.4 - 91.8

10 3. What was the total amount of **Indirect Cost actually recovered** at your university from Federal Research grants and contracts for the same period? (million $)

	MEAN	N
All	8.2	113
Private	15.1	24
Public	6.3	89

TOTAL ALL $925.4

RANGE $.1 - 38.5

4. What percent do each of the following categories contribute to your Total Direct Cost in the **Organized Research** function?

				RANGE
11 a) FEDERAL GRANTS AND CONTRACTS	Private 81% Public 58%	63%		4 - 95%
12 b) NON-FEDERAL GRANTS AND CONTRACTS		17%		0 - 46%
13 c) OTHER (including gifts, federal and state appropriations and other unrestricted funds)		20%		0 - 87%
TOTAL		100%		

VARIABLE #

5. If you have a separate rate(s) for educat'onal service agreements (i.e., non-research such as instructional trainee programs, extension and public service agreements), please enter these rates below and indicate with an X which base you use.

		Rate	Range	N
	Instruction			
14	ON-CAMPUS	54.9%	22 - 99%	89
16	OFF-CAMPUS	30.7%	15 - 64%	69
	Extension & Public Service			
18	ON-CAMPUS	35.9%	8 - 80%	45
20	OFF-CAMPUS	22.3%	8 - 39%	35

6. If your university has negotiated different indirect cost rates for federal and non-federal research sponsors, please indicate with an X whether the non-federal rates are generally higher, the same as or lower than the federal rates.

		Higher	Same	Lower	N
26	a) STATE GRANTS & CONTRACTS		43%	57%	6
27	b) SUB CONTRACTS & AGREEMENTS WITH OTHER COLLEGES & UNIVERSITIES		93%	7%	6
28	c) FOUNDATIONS		52%	48%	60
29	d) CORPORATIONS	10%	70%	20%	61
30	e) OTHER PRIVATE AGREEMENTS		70%	30%	60

7. Please indicate with an X whet'er you use depreciation or a use allowance in your indirect cost rate for:

		Use Allowance	Depreciation	other/both	N
31	a) MOVABLE EQUIPMENT	80%	15%	5%	112
32	b) BUILDING EQUIPMENT	91%	9%	0%	113
33	c) ALTERATIONS AND RENOVATIONS	87%	9%	4%	109
34	d) PREVIOUS CONSTRUCTION	88%	10%	2%	113
35	e) NEW CONSTRUCTION	89%	10%	1%	112

VARIABLE #

37 8. Where do you include central computer charges? (Please indicate with an X)

	Private	Public	All	N
a) DIRECT COST - INCLUDED IN MTDC	46%	66%	62%	70
b) DIRECT COST - EXCLUDED FROM MTDC	25%	17%	18%	21
c) INDIRECT COST	8%	7%	7%	8
d) DO NOT INCLUDE AS DIRECT OR INDIRECT WHEN CALCULATING THE INDIRECT COST RATE.	8%	1%	3%	3
e) SPLIT OR OTHER	13%	8%	10%	11
TOTAL	100%	100%	100%	113

9. What were your negotiated **fringe benefit rate(s)** applied to federally sponsored projects for fiscal year 1985? (Please enter allocation base: for example, regular non-student salary & wages; summer salaries; professional salaries)

38 - 54	Mean Fringe Benefit Rates Base	N	% of Respondents
	a) 22.9% of faculty academic year salary	97	86%
	b) 21.3% of faculty summer salary	97	86%
	c) 23.3% of professional & salaried	97	86%
	d) 5.9% of student salary/wages	44	39%

10. If all or part of the fringe benefits **provided to** your employees are paid by the State, please indicate with an X how these costs are recovered from sponsors. If not paid by State, please skip to item 11.

		Recovered by direct charge	Recovered by indirect charge	Not recovered	N
55	a) FRINGE BENEFITS ON DIRECT SALARIES	95%	5%		60
56	b) FRINGE BENEFITS ON INDIRECT SALARIES	9%	85%	6%	60

57 11. Are your fringe benefit costs included in or excluded from your research MTDC base? (Please indicate with an X)

	N	%
a) INCLUDED	110	97
b) EXCLUDED OR OTHER	3	3 *
	113	100

*All Land Grant

VARIABLE #

58 12. How do you recover faculty sabbatic salaries not directly charged to sponsored projects? (Please indicate with an X)

	N	%
a) IN THE FRINGE BENEFIT RATE	13	12
b) IN THE INDIRECT COST RATE	41	37
c) NOT RECOVERED	54	49
d) OTHER (please specify)_____	2	2
_____ TOTAL	110	100

59 13. If faculty sabbatic salaries are included in your indirect cost rate, in what cost category are they included? (Please indicate with an X)

	N	%
a) FRINGE BENEFITS (If treated as indirect cost)	2	5
b) DEPARTMENT ADMINISTRATION/SUPPORT	27	62
c) COLLEGE ADMINISTRATION	1	2
d) GENERAL ADMINISTRATION	9	20
e) OTHER (please specify) _____	5	11
_____ TOTAL	44	100

14. In which function do you include departmental research and research training when calculating the indirect cost rate? (Please indicate with an X)

	Research		Instruction		Other	
	%	N	%	N	%	N
60 a) DEPARTMENTAL RESEARCH*	9	10	89	101	2	2
61 b) RESEARCH TRAINING*	43	48	50	56	8	9

*as defined in OMB Circular A-21

VARIABLE #

15. Where do you include graduate and undergraduate research assistant costs in calculating your indirect rates? (Please indicate with an X)

		N	Direct Cost		Indirect Cost	Excluded/ Other
			Included in MTDC	Excluded from MTDC		
	Graduate students:					
62	a) WAGES/STIPEND	113	84%	6%	10%	
63	b) TUITION	91	26%	67%	1%	6%
64	c) FEES	82	31%	62%	2%	5%
65	d) STUDENT AID	71	17%	80%	3%	
	Undergraduate Students:					
66	a) WAGES/STIPEND	108	87%	6%		7%
67	b) TUITION	76	20%	75%	4%	1%
68	c) FEES	71	24%	72%	4%	
69	d) STUDENT AID	69	16%	80%	4%	

70 16. How do you treat subcontracts on federal grants and contracts?

	N	%
a) ALL SUBCONTRACT COSTS ARE EXCLUDED FROM MTDC	11	10
b) ONLY THE FIRST $25,000 OF EACH SUBCONTRACT INCLUDED IN MTDC	96	85
c) ANY SUBCONTRACT> $25.000 ENTIRELY EXCLUDED FROM MTDC	3	3
d) OTHER (please specify) _____ _____	3	2
TOTAL	113	100%

71 17. If the first $25,000 of a subcontract is included in MTDC, what is the indirect cost rate applied to the first $25,000 of the subcontract cost on sponsored research projects?

43.3%

N = 93

RANGE 7.5 - 72%

72 18. If you have an off-campus research rate, does it include rental, utilities and other operations and maintenance cost?

	N	%
a) YES	14	12
b) NO	93	82
c) DO NOT HAVE AN OFF-CAMPUS RATES	6	5

VARIABLE #

SECTION II: COST RECOVERIES

73 1. What happens to the indirect cost recovered on sponsored grants and contracts? (Please indicate with an X)

	N	%
a) ENTIRE AMOUNT RETURNED TO UNIVERSITY'S GENERAL OPERATING FUNDS AND ALLOCATED AS PART OF OVERALL BUDGETING PROCESS, INDEPENDENT OF THE ADMINISTRATIVE UNIT IN WHICH IT WAS GENERATED.	85	75
b) ENTIRE AMOUNT RETURNED TO THE STATE (if applicable)	1	1
c) ONLY A PORTION IS RETURNED TO THE STATE (please go to Question 2.)	27	24
d) OTHER (please specify)_____		
TOTAL	113	100

74 2. If only a part is returned to the state, please specify what portion it represents of the total collected.

N = 88 13%
RANGE 0 - 100%

3. The allocation of the funds recovered through the indirect cost charged to sponsored programs varies widely among universities. If any of the units listed below receives an allocation specifically based on either actual funds recovered, or indirect costs incurred by that unit, please indicate with an X.

		Amount allocated to specific unit is at least partially dependent on:		
	UNIT	Funds Recovered	Indirect Cost Incurred	Other (Specify)
75-77	a) COLLEGE, STATION	67%	16%	5%
78-80	b) DEPARTMENT, CENTER	59%	12%	3%
81-83	c) FACULTY MEMBER, PROJECT	25%	3%	3%
84-86	d) OTHER*	13%	5%	13%

*Please specify N = 91

4. If fringe benefits on salaries are charged direct to sponsored programs, please indicate what happens to the funds recovered.

	N	%
a) RETURNED TO THE STATE (if applicable)	23	20
b) RETAINED IN UNIVERSITY GENERAL FUND ACCOUNT	86	76
c) OTHER (please specify)_____	4	4
TOTAL	113	100%

VARIABLE #

5. What happens to the funds recovered for faculty academic year salaries charged to grants and contracts, often referred to as "salary recovery"?
(Please indicate with an X) X = 1 BLANK = 2

88	a) RETURNED TO STATE (if applicable)	7% of 89 state universities
89	b) RECORDED IN UNIVERSITY GENERAL ACCOUNT	27% of 113 universities
90	c) RECORDED IN COLLEGE ACCOUNT	23% of 113 universities
91	d) RECORDED IN DEPARTMENT ACCOUNT	66% of 113 universities
92	e) OTHER (please specify)_____	3% of 113 universities

_____

SECTION III: UNIVERSITY DATA

93 1. Please indicate with an X the type of university for which this survey is being completed.

	N	%
a) PRIVATE COLLEGE OR UNIVERSITY	24	21
b) STATE-SUPPORTED COLLEGE OR UNIVERSITY	89	79
TOTAL	113	100

2. For your university's fiscal year 1984-85 (or most recent year available), please specify what percent each function represents, of total direct expenditures.

N = 112

			RANGE
94	a) ORGANIZED RESEARCH	17.9%	1.8 - 69
95	b) INSTRUCTION	37.8%	0 - 77
96	c) EXTENSION & PUBLIC SERVICE	6.1%	0 - 49
97	d) TEACHING HOSPITAL	5.7%	0 - 62
98	e) AUXILIARY ENTERPRISES	12.5%	0 - 43
99	f) OTHER	20.0%	0 - 48
	Total Direct Cost	100%	

100 3. With which agency and district office do you negotiate the federally sponsored indirect cost rate for your university?

Agency	DHHS	88.5%	N = 100
	ONR	11.5%	N = 13

VARIABLE #

4. a) For the following years, what were your underrecovered costs, defined by OMB A-21 as (negotiated rates * MTDC - actual costs)?
Totals for all institutions in million dollars.

		N = 80		N = 79
101-102	FISCAL YEAR 82-83	$ 130.9	83-84	$ 150.8

104 b) Does your negotiated agreement have a carry forward provision to recover these costs?
N = 110 YES 35% NO 65%

63% private, 27% public 37% private, 73% public

105 c) If yes, how much have you agreed to waive of the recovery of carry forward costs from FY '83 or FY '84? (Please specify amount) N = 31
TOTAL AMOUNT $ 13.1 million

5. Actual Indirect Cost Allocated to On-Campus Sponsored Research for Fiscal Year 1983-84 N = 111

		AVERAGE (thousands $)	RANGE
107	Use allowances or depreciation - Buildings	499.1	0 - 2643
108	- Equipment	771.9	0 - 3155
109	Plant Maintenance & Operations	3638.9	0 - 15355
110	General Administration	1861.1	27 - 7693
111	Department Administration	4352.4	116 - 25300
112	Sponsored Program Administration	1005.9	0 - 7054
113	Library	585.8	6 - 3350
114	Student Services	81.7	0 - 802
115	Other (specify) including carry-forward adjustment	90.1	0 - 1770
	Total Indirect Cost - Sponsored Research	$ 12,887.1	292 - 51738
	Sponsored Research Modified Total Direct Cost Base	$ 26,021.7	568 - 120603

Actual Indirect Cost Rate (Ave) 50.7% of MTDC All
RANGE 30 - 98.6% 61.7% Private
47.7% Public

A Composite Research Project

One might never see a composite research budget like that which follows. However, it is essential for the analysis that the details, of similarities and differences between universities, in accounting for these costs be identified.

Imagine a major study that incorporates human subjects, animal subjects, weather satellite reports and leasing a reconnaissance plane. Such an effort would need a range of staffing: faculty; postdoctoral and graduate students; technicians; skilled fabricators; and unskilled support persons. Specialized equipment, vehicles, computers (both microcomputers and mainframe use) are needed, and special facilities (a radio tower and experimental lab) will need to be constructed. To conclude such a unique project, a major conference with attendant expenses will be held. Other miscellaneous items required include: service agreements, expendable supplies, travel, and communication expenses.

Part of this project will take place over a three month period in June, July and August. Assume that only items 1.2 - faculty summer salary; 1.7 - field workers; 4.1 - new construction (it will be abandoned at end of project); 5.2 - foreign travel; 9 - facilities and rent; 11.1 and 11.2 - subcontracts, may be considered off-campus, but only if it corresponds with your university's policies. If you do not have a separate off-campus rate, there is no need to segregate these costs.

This project is one in which the federal government is very much interested and it is likely to receive a very favorable ranking in the peer review process. The principal investigator is tops in the field and your university has an excellent reputation for research in this area.

Instructions for Attached Worksheet

Assume that there is no required cost sharing necessary. Given your university's limited resources, your goal is to maximize the recovery of direct and indirect costs for this project, within the established policies and guidelines of your university.

The first column contains all identified costs, except fringe benefits and indirect cost recovery which would vary by university. Please distribute these costs to columns B, C, D or E, as appropriate. Columns B and C are costs to be charged directly to the sponsor. Columns D and E would include costs recovered in the indirect cost rate or items not charged to sponsors, as part of university wide cost sharing policies. For example, there are some universities which have a policy not to charge faculty academic year salaries to sponsored projects. Others do not charge fringe benefits paid by the state or graduate research assistant tuition and/or fees.

Please do not change any of the fixed project costs, even though they may not reflect actual costs at your university (i.e. graduate student tuition). When you have completed the worksheet, turn to the budget page and calculate the Total Research Cost for this project.

If you have any questions about this survey, please call Rebecca Vallely at (607) 898-3440 or James Zuiches at (509) 335-4563.

- OVER -

SECTION IV: WORKSHEET AND SUMMARY

A. WORKSHEET - IDENTIFIED COST - page one
Project Period: Fiscal Year 1985-86

Project	N = 113 Included Excluded	Indirect	Distribution: Costs Charged Directly to Sponsors — Institutional Costs (A)	Other in MTDC Base (B)	Other from MTDC Base (C)	Costs Not Charged Directly to Sponsors — Cost (D)	Wide Cost Sharing (E)	(F)
	Salaries & Wages							
122	1. Faculty Academic Year 10%	$	4,700	86%	0%	0%	14%	
123	2. Faculty 2/9 Summer Salary (off campus)		7,400	100				
124	3. Other Professional, Post Doc 75%		16,100	98	2			
	4. Grad Student-research assistant							
125	a) Stipend-12 mos. 7,800			80	16		4	
126	b) Tuition 4,400			27	39	1	15	18
127	c) Fees 600		12,800	29	32	2	22	15
128	5. Secretarial/Clerical 25%		4,500	92		8		
129	6. Lab Techs, Other Tech & Skilled Staff 100% 1 FTE		22,000	100				
130	7. Other Support Staff (e.g. field workers) 50%		5,000	100				
	8. Temp. Wages							
131	a) Undergrad Students		1,000	99			1	
132	b) Others		500	99%			1%	
133-137	TOTAL Salaries	$	74,000	$ 67,329	$ 3552	$ 642	$ 1778	$ 699
	Fringe Benefits		fill in					
138-140	% of $		fringe					
141-143	% of $		benefits					
144-146	% of $		cost					
147-150	FRINGE BENEFIT TOTAL (Mean)			$ 12,804	$ 223	$ 128	$ 134	
	Equipment							
151	1. Meter		300	64%	35%	1%	0%	
152	2. Lab or Tech Equipment		24,700		98	1	1	
153	3. Computers - micros, IBM AT		7,000		97	2	1	
154	4. Vehicles - pickup truck		12,000		96	3	1	
155	5. Other - fabricated radio tower		10,000	4	94	1	1	
	Other Capital Expenditures							
156	1. New construction - special cost (e.g. facilities unique to this project)		8,000	18	74	7	2	
157	2. Renovation of Lab Space		2,000	17%	68%	11%	4%	
			(A)	(B)	(C)	(D)	(E)	(F)

Entries indicate percent of total universities distributing expense in column indicated.

VARIABLE #

	WORKSHEET - page two	Project Costs Base (A)	Costs Charged Directly to Sponsors: Included in MTDC Base (B)	Costs Charged Directly to Sponsors: Excluded from MTDC (C)	Costs Not Charged Directly to Sponsors: Indirect Cost (D)	Costs Not Charged Directly to Sponsors: Institutional Wide Cost Sharing (E)
	Travel					
158	1. Domestic	2,000	100%	0%	0%	0%
159	2. Foreign	4,000	100			
160	**Service Agreements for equipment**	750	91	5	4	
161	**Expendable Supplies**	2,000	100			
	Communications					
162	1. Publication Costs-page charges	500	94	4	2	
163	2. Telephone-long distance $15/mo.	180	91	5	4	
164	3. Telephone-local service $15/mo.	180	53	4	38	5
165	4. Photocopying - $20/mo.	240	95	4	2	
166	5. Postage (annual)	90	92	4	4	
167	**Facilities, Rent and Special Utilities** - off-campus location required for project (trailer)	3,600	75	22	3	
168	**Conference Expenses**-meals, travel, honorarium, 20 participants	15,000	86	14		
	Subcontracts					
169	1. Company A - weather satellite report	12,000	87	13		
170	2. Company B - lease reconnaissance <25,000	29,000	83	17		
171	plane 4,000 >25,000		2	98		
	Computer Charges (Main Frame)					
172	1. Central Campus	7,000	68	22	5	5
173	2. Local Departmental System	500	74	11	12	4
	Other					
174	1. Animal Care Costs $480/month	5,760	94	5	1	
175	2. Subject Payments $4/hr/subject 300 human subjects	1,200	94%	6%	0%	0%
176-180	TOTAL (Note:(A) excludes Fringe Benefits #2)	$ 222,000				
181-185	COLUMN TOTALS (including fringe benefit cost)	$ 234,649	$ 151,429	$ 78,284	$ 2,322	$ 2,602
	(Mean) N = 113	(A)	(B)	(C)	(D)	(E)

VARIABLE #

After distributing all of the project costs, including fringe benefits, to columns (B), (C), (D) or (E), please complete the Indirect Cost Calculations for this project and the complete Budget Summary below.

B. INDIRECT COST CALCULATIONS

If you use Modified Total Direct Cost Base, please complete Question 1 in this section.
If you use Salary and Wage Base, please complete Question 2 in this section.

	1. Modified Total Direct Cost Base	N = 113 On-campus	RANGE ($000)	N = 48 Off-campus	RANGE ($000)
186, 187	a) Total Direct Cost of this Project (from worksheet columns B & C)	214,149	92 - 242	36,641	0 - 93
188, 189	b) Less Cost Excluded from MTDC	(75,153)	50 - 145	(7,372)	0 - 55
190, 191	c) Modified Total Direct Cost Base	138,996	23 - 178	29,269	6 - 71
192, 193	d) 1985-1986 Negotiated Indirect Cost Rates	48.4%		26.2%	
194, 195	e) Total Indirect Cost (MTDC base * rate)	66,415	10 - 121	7,702	0 - 20

****

C. BUDGET SUMMARY

		RANGE ($000)	
206	1. Total Direct Cost (Totals from worksheet columns B & C)	204 - 242	$229,716
207	2. Total Indirect Cost (item f (on-campus + off-campus) from Indirect Cost Calculations)	31 - 121	$ 69,686
208	3. Total Research Cost to be charged to Sponsor	260 - 347	$299,402
209	4. Plus Research Cost Not Included Above (Total from worksheet column E)	0 - 14	$ 2,602
210	5. Total Research Cost for the Project (Sponsor's cost + institutional cost sharing)	261 - 357	$302,004

6. Average Indirect Cost Recovery as % of Total Research Cost

N = 113

All	23%
Private	30%
Public	21%
Land Grant	19%

VARIABLE #

211 "Actual recovery rate" equals the Indirect Cost Actually Recovered from Federal Research Grants & Contracts divided by the sum of Federal Direct Grant & Contract Expenditures and Federal Indirect Cost Recovered from Federal Research Grants & Contracts.

$$\frac{\text{Variable \#8}}{\text{Variable \#8 + Variable \#10}}$$

212-214 & 217-224 Indicates the percent of the indirect cost rate each category represents (General Administration, Department Administration and Sponsored Program Administration, etc.) as indicated from variables # [illegible] - 118.

215-216 Indicates the ratio of sponsor cost to the total cost of the project, and the indirect cost charges as a percent of the total project cost.

THANK YOU FOR COMPLETING THE QUESTIONNAIRE.